

Asynchronous Motor or Servo Drive?

ABM Greiffenberger Antriebstechnik GmbH will present an alternative at the ITMA:

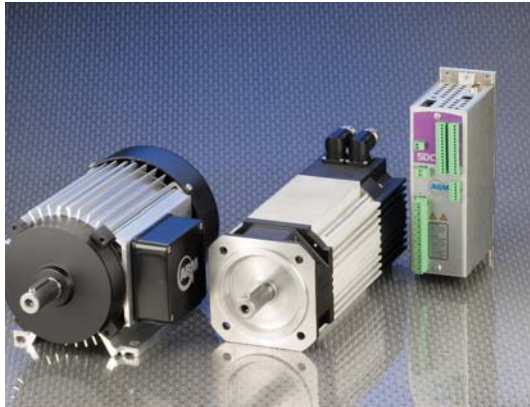
Sensorless Drive Units for High-Performance Textile Machinery

Highest reliability and excellent control even in applications operating at high speed: These are electrical drive unit challenges in the textile industry. ABM Greiffenberger Antriebstechnik GmbH will present drive systems at ITMA specifically designed for this high demanding area of the electro-mechanical drive technology.

Asynchronous motor or servo drive? Questions asked by designers of textile machinery choosing drive units, e.g. for re-winders or coilers or looking for energy saving main drives for central machinery functions. These very common motor types do have different characteristics, however. One drawback of the asynchronous motor is the bigger volume, meaning it is more difficult to integrate it into the machine.

On the other hand the servo motor needs an encoder to sense speed and position of the rotor to be able to control torque and motor speed. For that reason this drive system causes relatively high up-front cost and a complex installation, respectively.

The ideal solution: The **SINOCHRON**[®]Motor



*ABM **SINOCHRON**[®]Motor with Drive Controller SDC*

As drive technology system provider serving well-known textile machinery manufacturers, ABM Greiffenberger has been looking for a concept without these disadvantages, featuring favorable cost, simple installation and excellent controllability instead.

The result of this development is the **SINOCHRON**[®]Motor: a synchronous motor with high performance permanent magnets offering a sinusoidal allocation of the electromotive force. (EMF) Additional characteristics of this motor design are good rotational behavior and low noise emission. Further, those motors feature a high efficiency and high power density – qualifying for the design of compact and energy saving drive systems at the same time.

Sensorless control: software adopts the function of the rotor position sensor

That, however, does not solve the challenge of the controller. This is where the engineers of ABM Greiffenberger come into play. They developed a technical and economical convincing solution. The actual values of rotor position and speed are not measured mechanically, but calculated from electrical variables. The electronic controllers of the TechLine SDC (ServoDriveController) required for that process have been developed by ABM and optimized for the characteristics of the **SINOCHRON**[®]Motors. The SDC-controllers map the required values in the software of the controller using the motor parameters to eliminate a separate encoder. Former hardware functions are shifted into the

software abandoning components of the drive system to save cost and space.



*Application Example Textile
Machine*

Nevertheless, a high accuracy will be achieved. The system is able to detect the position of the rotor within a precision of 5° - absolutely sufficient for drives with a speed range of 1:1000 and a medium position accuracy.

High Reliability

The sensorless drive with **SINOCHRON**[®] Motor offers additional advantages besides the compact design, the cost savings and the simple wiring. Waiving the rotor position / speed sensor creates the premise for higher reliability of the drive system. Since the position of the rotor can be identified in any orientation there is no need to align it before the start. That avoids uncontrolled movements of the shaft – a plus, particularly appreciated in the textile industry.

Optimum match of customized requirements

The drive system with **SINOCHRON**[®] Motor and SDC-Controller allows an optimum fit for customized requirements by taking advantage of the “Advanced Controller” integrated into the control unit in addition to the speed and torque controller. The “Advanced Controller” will be programmed by ABM Greiffenberger with customized application requirements. The adjusted torque and speed behavior as well as a

brake torque specifically tuned to the application will allow optimized acceleration and precise deceleration and positioning.

That enables generation of business solutions for the textile industry satisfying the highest demands while integrating special functions like electronic wave or synchronized control without integral errors, with little effort. Since the drive units do operate in the field weakening area also, it is possible to serve applications demanding constant output, e.g. winder drives.

Target of development: Saving cost

One target of the development of the **SINOCHRON**[®]Motor with SDC-controller was to offer cost savings to the textile machinery manufacturer. Even this target has been achieved by ABM Greiffenberger. The user will save approximately 20% compared to a servo motor with encoder. This number refers to the purchasing cost, only. In regards to the asynchronous motor the savings are in the operating cost. The thermal power loss of the **SINOCHRON**[®]Motor is up to 40% lower as of the asynchronous motor.

The advantages of the modular concept

Additionally, the textile machinery manufacturer profits from a complete drive system from one hand, available in outputs between 0.37 and 7.5 kW. The components motor, gearbox, brake and controller are perfectly matched. Based on this concept ABM Greiffenberger develops individual drive systems designed for highest efficiency and a long life cycle. ABM engineers benefit from industry specific know-how earned in longtime collaboration with leading companies in the textile industry.

ABM Greiffenberger at the ITMA: Exhibiton Hall A 5 Booth 365

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